Project Proposal

In this project, I will create a world of Harry Potter. Generally speaking, it is a game that allows users to experience this magic world and interact with the scene.

The whole Harry Potter world will be composed of three sections: the Hogwarts Castle, the Forbidden Forest and the Quidditch Court. And there will be both day and night modes.

In the Hogwarts Castle section, I will start with the castle 3D scene that I have already built. Users will use the first person navigation to explore the whole castle and hold a magic wand which will move together with the first person view. Inside the Hogwarts castle, there will be the hall and Gryffindor Public Lounge. The hall and the lounge will be connected by stairs. In the Gryffindor Public Lounge, users will see the views from the window and light from outside will be modeled when under the day mode. In the night mode, users could wave their wand to create flames and make it fly to the torches on the wall as well as light the fireplace. Inside the lounge, users could also operate some charms like *Wingardium Leviosa*(which could make an object stay still in the air), *Tergeo*(which could make an object clean), *Engoreo*(which could make an object grow really fast). In this section, the challenges will be:

1. the light modeling;
2. 3D selection(the object selection).

In the Forbidden Forest section, a lake will be surrounded by a number of trees. The whole environment will be very dark. Users could use the charm *Lumos* to enlighten around as well as set some fireworks. What's more, users could also use *Expecto Patronum* to call their own patronums. I will create three patronums and the users will be given one of them randomly. In this section, the challenges will be:

1. the water wave simulation;
2. the light modeling with water and patronums' own light;
3. the particle engine when creating the fireworks.

In the Quidditch Court section, there will be Quidditch Court and users could choose

to use the broomsticks to fly or not from the menu. When flying, users could view the whole Hogwarts Castle, Forbidden Forest as well as the court. Users could also play Quidditch here. Users could choose to hit the ball, keep the gate or catch the golden Snitch from the menu. In this section, the challenges will be:

1. 3D selection;

2. the ball runway calculation.

Stretch goals:

1） There will be a map to indicate the position of the users, like *Marauders Map*

2） The Stairs will be moveable inside the castle.

3） There will be some portraits on the hall's wall.

4） There will be a flying car and users could operate it.

5） Building the project in Qt to provide a more friendly user interface.

Super stretch goals:

1) The portraits can be moveable if users wave their wand before the portraits.